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Accounting Restatements and External Financing Choices*

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Abstract

There is little research on how accounting information quality affects a firm's external financing choices. In this paper, we use the occurrence of accounting restatements as a proxy for the reduced credibility of accounting information and investigate how restatements affect a firm's external financing choices. We find that for firms that obtain external financing after restatements, they rely more on debt financing, especially private debt financing, and less on equity financing. The increase in debt financing is more pronounced for firms with more severe information problems and less pronounced for firms with prompt CEO/CFO turnover and auditor dismissal. Our evidence indicates that accounting information quality affects capital providers' resource allocation and that debt holders help alleviate information problems after accounting restatements.

Key words: earnings restatements, external financing

JEL codes: G32, M40

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1. Introduction

A fundamental objective of financial reporting is to facilitate resource allocation in the capital markets. In their conceptual framework, both the FASB and IASB emphasize that accounting information should be useful to a wide range of capital providers, including creditors and equity investors, to decide whether to provide financing. Because different capital providers can have different abilities to address information problems, an immediate question is whether accounting information quality affects firms' choices among external capital providers. In this paper, we examine how accounting restatements, a proxy for reduced credibility of accounting information, affect firms' choices among private debt, public debt, and equity.[1] Accounting restatements offer an ideal setting to study the impact of accounting information quality on financing choices because prior research finds that restatements lead to a decrease in accounting credibility (e.g., Wilson 2008). We therefore link the decrease in accounting credibility to changes in firms' external financing choices. Examining this link can help us better understand how accounting information quality affects capital allocation overall as well as specific firms' financing decisions. Such an investigation is especially important given the recent empirical evidence that challenges the importance of information asymmetry in explaining firms' financing decisions (Fama and French 2005).[2]

This paper is also motivated by the prevalence of accounting restatements observed in the last decade. The United States General Accounting Office (GAO) documented that from January 1997 to June 2002, 919 firms restated their financial statements because of accounting errors

[1] We focus on an important dimension of accounting information quality: the credibility of accounting information. We argue that in the restatement setting, credibility is the dimension of accounting quality that undergoes the most significant change from before to after the restatement. To simplify the discussion, we use accounting information quality and credibility interchangeably hereafter.

[2] Examining the frequency and magnitude of firms' external financing, Fama and French (2005) conclude that information asymmetry in general does not seem to be an important determinant of external financing choices.

and/or frauds (GAO 2003). Spurred by the growing list of accounting and corporate scandals, the U.S. Congress passed the Sarbanes and Oxley Act (SOX) on July 30, 2002. However, Hennes et al. (2008) and Scholz (2008) find that the number of restatements continues to be high in the post-SOX period. While prior studies have examined the consequences of restatements in terms of the drop in market value and the reduction in accounting quality, it is less clear how restatements affect firms' financing and operations. Our paper extends this line of research by shedding light on the impact of restatements on firms' external financing choices. An altered or limited set of external financing choices can be another consequence of aggressive financial reporting, with direct impact on firms' external financing flexibility as well as investments and operations.

The premise of our hypotheses is the link between accounting credibility, information asymmetry, and external financing choices. Prior research shows that financing choices are affected by the information asymmetry between outside investors and insiders (e.g., Myers and Majluf 1984). Because debt holders (particularly private debt holders) can obtain information through private channels, information asymmetry problems affect debt financing less than equity financing. After restatements, the credibility of financial reporting is lower; outsiders are more suspicious of the information provided by managers. Although investors have more accurate information about the restated period, restatements lead investors to question the quality of the firm's financial reporting. As a result, information credibility is lower, and the perceived information asymmetry is likely greater after restatements. Thus we expect restatement firms to rely more on debt financing, in particular private debt financing, and less on equity financing. However, if information asymmetry is not an important determinant of financing choices, as argued by Fama and French (2005), or if the cost of additional debt financing (e.g., an increase in

default risk and close monitoring by lenders) is excessively high, then we will not find results consistent with these predictions.

We test our predictions using a group of 819 firms announcing accounting restatements in the period 1997-2006, including 236 material restatements as identified by Hennes et al. (2008) and 583 other restatements.[3] We use the full sample of restatements to broaden the research scope and at the same time separate out material restatements to increase the power of tests. We obtain data on private debt, including bank loans, from DealScan and data on public debt and equity from Securities Data Corporation (SDC). We find that the likelihood of obtaining external financing is significantly lower after restatements, primarily for firms with material restatements, consistent with these firms having difficulty obtaining external financing.

More importantly, for restatement firms that obtain external financing after restatements, we find that they rely more on debt financing and less on equity financing than they do before, consistent with our prediction. We also find that the results are driven by firms with material restatements; other restatement firms do not experience significant changes in the composition of external financing after restatement announcements. Among firms with material restatements, the proportion of external financing in the form of debt increases by about 11 percentage points. Further analysis indicates that this increase is driven by private debt financing. The relative use of public debt does not change significantly. These results are consistent with material restatements leading to more serious doubts among investors regarding the quality of financial reporting.

[3] Hennes et al. (2008) classify a restatement as an accounting irregularity if restatement announcements or SEC filings include words like "irregularity" or "fraud," if the firm is charged by the SEC or the Department of Justice, or if the firm is subject to independent investigations. See Hennes et al. (2008, 1493-1494) for details and Andrew Leone's website for the list of "accounting irregularities" (http://sbaleone.bus.miami.edu/). In this paper, we refer to these "accounting irregularities" as material restatements because these restatements are likely material but not all of them are proved to be intentional or fraudulent in nature.

We next explore whether the extent of information problems affects the change in external financing choices. We find that, consistent with our prediction, among firms with material restatements, those with a greater increase in forecast dispersion after restatement announcements experience a larger increase in debt financing than others. This result is robust to controlling for changes in investors' expectations about firms' future earnings.

Analyses of individual years in the post-restatement period show that for the first three years after restatement announcements, firms uniformly rely more on debt financing. At the same time, the increase in debt financing is gradually tapering off. We also find that firms with more negative restatements are more likely to switch to debt financing. We further find that restatement firms that promptly replace their CEOs / CFOs and external auditors experience a smaller change in external financing choices. This indicates that promptly replacing top executives and auditors can help the firm to regain investors' confidence.

Our paper contributes to the literature by providing direct empirical evidence on the impact of accounting information credibility on external financing choices among private debt, public debt, and equity. To our knowledge, this paper is the first to examine the implications of accounting information quality for firms' choices among a broad menu of financing means. On one hand, our finding that restatement firms rely more on debt financing indicates the importance of debt holders in alleviating information problems. On the other hand, our finding suggests that equity capital providers are affected more by accounting information quality.

A recent study, Bharath et al. (2008), investigates how accrual quality affects firms' choice between private and public debt. They find that firms with lower accrual quality prefer private debt over public debt financing. We advance the literature by examining the impact of accounting information credibility on a *full* range of external financing choices in the restatement

setting. We find that in the restatement setting, a setting where a firm experiences a significant drop in accounting information credibility, the main tradeoff is between private debt and equity financing, while the tradeoff between private and public debt financing is less critical. It is equity financing, not public debt financing, that restatement firms shy away from.

Our paper is also related to recent studies that document increases in the cost of capital after restatements: Hribar and Jenkins (2004), Graham et al. (2008), Shi and Zhang (2008). While an increase in the cost of capital implies that firms are less likely to raise external financing, it does not inform us whether firms alter external financing choices after restatements. Our paper complements these studies by investigating whether restatement firms' choices across *different* financing sources are affected. We provide evidence that restatement firms increase their reliance on private debt (including bank loans), which comes with higher costs and more stringent contract terms after restatements, as documented in Graham et al. (2008). In addition, we find that after restatements, the increase in the use of debt financing is associated with a decrease in return volatility. If this decrease in return volatility is the outcome of foregoing risky, but positive net present value projects, then the increased reliance on debt holders after restatements can be detrimental to shareholders.

The remainder of the paper is organized as follows. Section 2 provides a summary of prior research and develops hypotheses. Section 3 discusses the restatement sample and data. Section 4 reports the main analysis of external financing choices, and Section 5 reports additional and sensitivity tests. Section 6 concludes.

2. Prior research and hypothesis development

Our paper builds on two lines of research: (1) studies that investigate the economic

consequences of accounting restatements, and (2) studies that examine how accounting information quality affects external financing choices. Below we briefly review these studies and then develop our hypotheses of the impact of restatements on external financing choices.

2.1 Economic consequences of accounting restatements

An accounting restatement is a correction of previously issued financial information that is inaccurate. In many cases, the restatement is a result of governance weaknesses (e.g., Agrawal and Chadha 2005) and the breakdown of the management reward system (e.g., Burns and Kedia 2006; Cheng and Warfield 2005; Efendi et al. 2007). In the most severe cases, accounting restatements can lead to the discovery of egregious accounting frauds such as in the cases of Enron and WorldCom. As such, restatement announcements often lead to a significant drop in market value and a confidence crisis among outside investors. Consistent with this notion, the credibility of reported earnings decreases and the perceived information asymmetry increases significantly following restatements (Anderson and Yohn 2002; Palmrose et al. 2004; Wilson 2008).

Three recent studies examine the change in the cost of capital after restatements. Hribar and Jenkins (2004) find that the implied cost of equity capital increases after restatement announcements.[4] Focusing on private debt, Graham et al. (2008) find that the cost of bank loans increases by about 0.7 percentage points after restatements. Graham et al. also find that compared to loan contracts completed before restatements, those initiated after restatements have shorter maturity, are more likely to have collateral, and have more covenants. Shi and Zhang (2008) find a similar increase in interest rates for bonds issued after restatements.

While these findings indicate that restatement firms are subject to higher cost of capital, it

[4] Table 2 of Hribar and Jenkins (2004) indicates that depending on the model specifications, the median of the increase in the *implied* cost of equity capital ranges from 0.17 to 0.42 percentage points and the mean of the increase ranges from 0.9 to 1.75 percentage points.

is unclear from these findings whether restatements affect firms' external financing choices. First, the increase in the cost of capital appears to be of similar magnitude across different types of external financing. Second, the costs of private and public debt financing are only available for those firms that obtain such debt financing after restatements. Thus, we do not know what the cost would have been if other firms had also obtained debt financing; it could be higher or lower than what is estimated for firms with debt financing. This incomparability of samples across these studies suggests that the results cannot be directly compared. Third, financing choices depend not only on price terms (e.g., interest rate) but also on non-price terms, such as the maturity and the use of collateral for debt financing. Thus, examining price terms alone does not provide enough information for firms' external financing choices (e.g., Graham et al. 2008).

In summary, prior research documents that accounting restatements lead to substantial damage to financial reporting credibility, increases in the perceived information asymmetry, decreases in shareholder wealth, and increases in the cost of capital. Our paper extends this line of research by investigating how restatements affect firms' external financing choices. Findings of changed or restricted external financing choices after restatements will be evidence of another economic consequence of accounting restatements and evidence that accounting quality affects external financing choices.

2.2 Accounting information quality and external financing choices

With the exception of Bharath et al. (2008), to date there is limited research that examines how accounting information quality affects external financing choices.[5] Focusing on the debt market, Bharath et al. examine how accounting information quality, as measured by accrual

[5] Several studies (e.g., Ball et al. 2008; Hope et al. 2010) examine issues related to financial reporting and external financing in an international setting. For example, Ball et al. (2008) examine the role of external financing providers in shaping financial reporting and find that debt holders have a greater impact on conservatism than equity holders. Hope et al. (2010) focus on private firms and find that it is easier for private firms with more credible accounting information (proxied by the existence of an external audit of the financial statements) to obtain external financing.

quality, affects firms' choices between private and public debt financing. They find that firms with lower accounting information quality, except those with high growth opportunities, are more likely to use private debt than other firms. Unlike Bharath et al., we examine not only the tradeoff between public and private debt financing, but also the tradeoff between debt and equity financing, a central focus of many capital structure studies. Lower information credibility, as manifested by restatements, likely affects both the debt-equity and the private-public debt tradeoff. Taken together, these two papers provide a more complete picture of how accounting information quality affects external financing choices.[6]

2.3 Hypothesis development

Our main hypothesis focuses on whether restatements affect firms' external financing choices among the following: private debt (including bank loans), public debt, and equity.[7] Here we discuss the key determinants of external financing choices and how those determinants change after restatements.

Debt versus equity

When there is information asymmetry between managers and outsiders, potential equity investors require higher returns to compensate for the information risk. Banks and other lenders, on the other hand, have better information about the firm, as they can devote more time and resources to information acquisition activities and have better access to the management.

[6] Our paper is also related to studies that test the basic claim of the pecking order theory that information asymmetry affects capital structure decisions. The extant findings are mixed. For example, while Fama and French (2005) conclude that information asymmetry is not a significant determinant of financing choices, Bharath, Pasquariello, and Wu (2009) find that information asymmetry, as measured by the adverse selection component of the quote and bid-ask spread, affects capital structure decisions. Our paper differs from these studies by focusing on accounting information credibility, specifically, the event of reduced accounting information credibility as a result of accounting restatements.

[7] We do not expect restatements to affect bank loans and other privately placed debt (e.g., debt placed with wealthy individuals or institutions other than banks) differently. These two types of financing are similar in terms of lenders' information advantage, lenders' close monitoring, and the ease of negotiation in the event of default. Thus, we combine these two and refer to them as private debt throughout the paper.

Accordingly, information asymmetry between lenders and managers is lower than that between equity investors and managers (e.g., Diamond 1991). In addition, debt holders can protect their investments by imposing stricter contracting terms (e.g., collateral) that are unavailable to equity investors. Thus, in the presence of information asymmetry, firms prefer debt financing over equity financing (Grossman and Hart 1982; Myers 1984; Myers and Majluf 1984).

After restatements, investors are more suspicious of the information provided by managers, and the credibility of financial reporting is lower.[8] As a result, investors will discount the information provided by the firm, leading to an increase in perceived information asymmetry.[9] It thus follows that the greater perceived information asymmetry will lead to an increase in the relative use of debt financing.

The above discussion leads to our first hypothesis:

H1: Ceteris paribus, restatement firms are more likely to use debt financing and are less likely to use equity financing in the post-restatement period.

One might argue that firms prefer equity financing after restatements because the benefits of debt financing–the reduction in income taxes and the mitigation of free cash flow problems–are less important after restatements due to firms' poorer performance (Jensen 1986). Also, the increased likelihood of bankruptcy, the close monitoring of debt holders, and the increased restrictions of debt financing after restatements might deter managers from debt financing (Datta et al. 1999; Fama and French 2002). Therefore, whether firms rely more on debt financing after

[8] Prior studies find that accounting information credibility decreases and perceived information asymmetry increases after restatements, using proxies including earnings response coefficient, bid-ask spread, forecast dispersion, and a market-based measure of accounting information quality (Anderson and Yohn 2002; Palmrose et al. 2004; Ecker et al. 2006; Wilson 2008). In additional tests reported later, we confirm that restatement firms in our sample experience a significant increase in information asymmetry.

[9] In its conceptual framework, the FASB emphasizes the importance of information credibility for investors' decisions. In paragraph BC2.43, the FASB (2008) argues that (emphasis added), "*Clearly, information will not be of much help in decision making if users do not consider it worthy of belief.* … Whether users consider the information in an entity's financial report to be credible will depend heavily on their view of the trustworthiness of the entity's management and auditors."

restatements remains an empirical question.

Private versus public debt

Among debt holders, private lenders usually have information advantage over public debt holders. While public debt holders have to rely on public disclosure, companies can provide information to private debt holders selectively when managers are concerned with the cost of disclosing potentially proprietary information in public. Private lenders also enjoy economies of scale in information acquisition and monitoring activities due to their concentrated holdings. The free-rider problem with information acquisition is less a concern in the private debt setting, and thus private lenders are more willing to acquire information about the companies, further reducing information asymmetry. Because of these reasons, private lenders (including banks) have an information advantage (Boyd and Prescott 1986; Diamond 1991; Datta et al. 1999). Consistent with this notion, Bharath et al. (2008) find that firms with high abnormal accruals, a proxy for information risk, prefer bank loans to public debt.

In addition, in the event of debt covenant violation, renegotiation costs are lower for private debt than for public debt because it is easier to negotiate with a small set of lenders than with a large group of bondholders. After restatements, the prospect for the firms is poorer and the default risk is generally higher (Graham et al. 2008). To reduce ex post negotiation costs, restatement firms are more likely to obtain financing from a relatively small group of lenders than from a large group of bondholders.

The above discussion leads to our second hypothesis:

H2: Ceteris paribus, restatement firms are more likely to use private debt financing, relative to public debt financing, in the post-restatement period.

The impact of information problems after restatements

When making external financing decisions, firms trade off information benefits and

contracting costs of debt financing (Hart and Moore 1995). Our discussions above focus on the average change for restatement firms. In addition, the underlying argument implies that firms with more severe information problems after restatements are more likely to rely on debt financing than other firms. That is, the more severe the information problem is, the larger the increase in debt financing after restatements. Hence we predict that:

H3: Ceteris paribus, restatement firms that have more severe information problems are more likely to use debt financing in the post-restatement period than other restatement firms.

Following prior research (e.g., Graham et al. 2008), we use the change in analyst forecast dispersion around restatements to proxy for information problems after restatements. The greater the increase in forecast dispersion, the more serious the information credibility issue will be after restatements. Since restatements are associated with both a decrease in information credibility and a decrease in performance, we control for change in analysts' expectations of future performance.

3. Sample and data

3.1 The restatement sample and matching firms

GAO (2003) and later updates contain restatements announced from January 1997 to the first half of 2006. Recent studies show that the restatements included in GAO reports vary in severity and nature. While some restatements are material and probably result from intentional misstatements, others result from accounting errors and difficulties in implementing complex accounting rules (e.g., Srinivasan 2005; Hennes et al. 2008; Plumlee and Yohn 2010). In order to achieve a balance between a comprehensive set of restatements and the power of the tests, we use all restatements with available data as the full sample but separately investigate the subset of

restatements that are classified as "accounting irregularities" by Hennes et al. (2008), which we refer to as material restatements. We expect material restatements to lead to greater loss of investors' trust in managerial integrity and greater reduction in accounting credibility than other restatements. Thus, the tendency for restatement firms to switch to debt financing, as hypothesized in H1 and H2, is stronger for firms with material restatements than for other restatement firms.

Table 1, Panel A presents the sample selection. We start with 2,705 restatements in the GAO reports. We lose 341 restatements because of missing basic financial data from Compustat and an additional 573 due to multiple restatements announced by the same firm in the sample period.[10] Following prior research of external financing, we exclude 321 firms in utilities (SICs 4900-4999) and financial industries (SICs 6000-6999). Since our main objective is to examine the change in external financing choices after restatements, firms without any external financing activities around restatements will not contribute to our investigation. As a result, we exclude 284 firms that have no external financing activities in the six years around the restatement announcement year – the fiscal year in which the restatement was announced. We then exclude 189 restatement firms that do not have required data to calculate regression variables.

To ensure that our results are not driven by the temporal shift in the external financing markets, we compare the restatement firms with a group of firms matched on industry membership, year, firm size, and performance measures.[11] We are unable to find matching firms

[10] Because we need both pre- and post-restatement information, we only keep the first observation for firms with multiple restatements to avoid any contamination effects of earlier restatements on later ones. Based on our reading of firms' filings related to restatements, many of the subsequent restatements are related to the same restated period as the earlier restatement. Our results are robust to excluding firms with multiple restatements.

[11] Specifically, for each restatement firm, we find a matching firm from Compustat that does not have restatements in the sample period. We match in the year of the restatement announcement based on the following criteria: (1) the same 3-digit SIC code, (2) total assets within 10 percent of the restatement firm's total assets, and (3) the closest rank of firm performance (defined as the average rank of market-to-book ratio, Z-score, and stock returns over the year; if any of the three measures is missing, we use the other two measures to calculate the average performance

for 26 restatement firms and thus exclude them from the sample. We lose another 152 restatement firms because the corresponding matching firms do not have required data to calculate regression variables. The above steps leave us with a full sample of 819 pairs of restatement and matching firms. Of these restatements, 236 are classified as material restatements, i.e., those identified as "accounting irregularities" by Hennes et al. (2008), and the rest (583) as other restatements. The yearly and industry distribution (untabulated) indicate that there are slightly more restatements in the second half of the sample period and that the sample firms operate in a broad spectrum of industries.

Table 1, Panel B presents descriptive statistics on restatement firms' financial characteristics in the year of restatement announcement. On average, restatement firms have a market value of $2.2 billion and are profitable, with a mean ROA of 5.7%. The mean market-to-book ratio and debt-to-total-assets ratios are 1.771 and 0.253, respectively. Firms with material restatements are slightly larger than the average restatement firms and have worse accounting performance (ROA) and more negative stock returns in the year of restatement announcements.

3.2 The timeline

To investigate the change in external financing choices after restatements, we compare the three fiscal years before restatement announcements (years t-3, t-2, and t-1) and the three fiscal years afterwards (years t+1, t+2, and t+3). See Figure 1 for the timeline. The impact of restatements is gauged by the change in external financing choices from the pre- to the post-restatement period. For the post-restatement period, we study the period as a whole in the main

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rank). As with restatement firms, we require that matching firms have external financing activities in the six years around the corresponding restatement announcement year. For the restatement firms for which we are unable to find a matching firm using the above criteria, we maintain the matching criteria of size and performance rank, but relax the restrictions on industry membership, using two-digit SIC codes or one-digit SIC codes. Because of imperfect matches, we follow Cram et al.'s (2009) suggestion and control for these variables explicitly in the regressions. We include firm size, market-to-book ratio, stock returns, and industry dummies in the main analyses. We include Z-score in a sensitivity test due to data availability issue and obtain quantitatively similar results.

analyses in order to increase the power of tests and study individual years separately in an additional test to shed light on the over-time change in external financing choices. Because financing in the restatement announcement year includes both financing before restatement announcements and financing after restatement announcements, we do not include it in the tests of our hypotheses. In a sensitivity test, we include year t in the post-restatement period and the inferences remain the same.

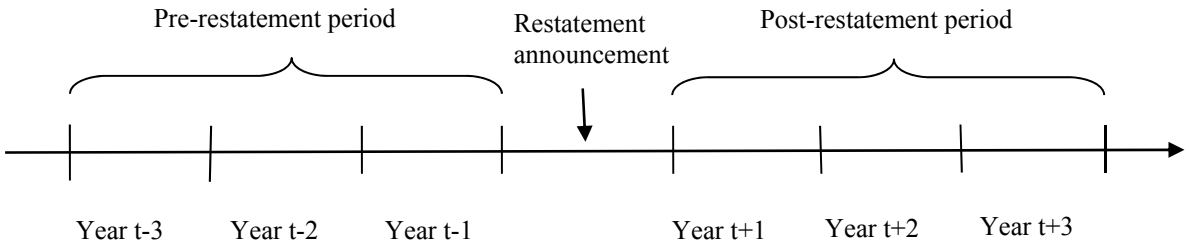

Figure 1 Time Line

3.3 External financing data

We collect data on restatement and matching firms' debt and equity financing for the six years around restatement announcements. We obtain data on private debt, including bank loans, from DealScan. We obtain data on public debt and equity from the Securities Data Corporation (SDC). For each type of financing, we collect information on individual transactions and then aggregate transactions with completion dates or issuance dates in the same fiscal year together to come up with the total amount of financing for a firm-year. We add the amount of all three types of financing together to obtain the total external financing for a firm-year.

Table 2 reports the number of restatement firms that obtain external financing in the restatement announcement year and in each of the six years around it. It also reports the average amount of external funds raised for firms with external financing. The number of firms with external financing ranges from 294 in year t+3 to 446 in year t-1. The average amount of external

financing raised ranges from $456 million in year t+1 to $720 million in year t+3. With respect to the types of external financing, the magnitude of debt financing is greater than that of equity financing. Within debt financing, the magnitude is greater for private debt than for public debt. These patterns also hold for the matching firms and the material restatement firms. For brevity, we do not tabulate the statistics on external financing for them.

We examine the change in the likelihood of external financing for restatement firms. The results are reported in Appendix B. Specifically, we regress the incidence of external financing on the indicator for the post-restatement period, the indicators for material restatement and other restatement firms, the interaction of the post-restatement period indicator and the restatement indicators, and control variables. We find that compared with matching firms, firms with material restatements are less likely to have external financing after restatements than before. We find no change in the likelihood of external financing for other restatement firms. This result is consistent with the difficulty of obtaining external funds for firms with material restatements, confirming prior research that the cost of raising capital increases after restatements.

4. Change in external financing choices after restatements

4.1 Univariate analyses

In this section, we report the univariate analyses. To test the impact of restatements on external financing choices, we adopt a difference-in-differences approach. We first compare the pre- and post-restatement levels of the use of a particular type of external financing. This comparison controls for the effects of time-invariant firm attributes. We then compare the change in external financing between restatement firms and matching firms. This comparison controls for the impact of the change in macroeconomic condition on external financing choices. Because

we identify matching firms based on industry, year, size and performance measures, this comparison also controls for the influence of these factors.

Table 3 reports the results, first for all restatement firms then for material restatement firms. The proportion of each type of financing for a firm in the pre- (post-) restatement period is defined as the ratio of this type of financing in dollar amount to the total amount of external financing for the firm in t-1~t-3 (t+1~t+3); if a firm does not have this type of external financing, the ratio is set as zero. This variable is only meaningful for periods with external financing; thus, the analyses are based on observations with non-zero external financing in the pre- or post-restatement periods.

Overall, for the full sample of restatement firms, the proportion of equity financing drops from 30.2 percent in the pre-restatement period to 27.5 percent in the post-restatement period. However, during the same period, matching firms also experience a similar decrease in the reliance on equity financing. The difference in the change in equity financing between the two groups is insignificant (p=0.985). The difference in the change in private or public debt financing is not significant either.

The results are different once we focus on firms with material restatements. While the matching firms experience an insignificant decrease in the use of equity financing, firms with material restatements experience a significant decrease in their reliance on equity financing (from 32.4 percent to 19.1 percent). The difference in differences is significant at the 0.014 level. The pattern is opposite for the use of private debt. For firms with material restatements, the proportion of private debt financing increases significantly from 51.0 percent to 66.5 percent, while the change is insignificant for the matching firms. The difference in differences is significant at the 0.004 level. With respect to public debt financing, the changes are insignificant

for both material restatement firms and matching firms.[12]

These univariate analyses indicate that while the full sample of restatement firms do not experience a significant change in external financing choices compared to matching firms, firms with material restatements experience a significant increase in the use of private debt financing, a significant decrease in the use of equity financing, and an insignificant change in the use of public debt. These findings are consistent with hypotheses H1 and H2 for firms with material restatements. The lack of significant results for the full sample is consistent with the notion that non-material restatements likely have little impact on the credibility of financial information and financing structure.

4.2 Multiple regressions

Research design

To investigate the change in external financing choices after restatements, we regress the relative use of each type of external financing on an indicator for restatement firms, an indicator for the post-restatement period, and the interaction of the two:

$$\begin{aligned} External\_Financing_{j,it} = {} & \alpha + \beta_1 Restatemen\ t_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Restatemen\ t_i \\ & + \gamma Controls_{i,t-1} + \varphi\ Matched\ \ Pair\ Dummies + \lambda\ Industry\ \ Dummies + \varepsilon_{j,it} \end{aligned} \quad (1)$$

$External\_Financing_{j,it}$ is the relative use of type j financing (j = total debt, private debt, public debt, or equity) by firm i in year t. It is defined as the ratio of type j financing in dollar amount to the total amount of external financing in the year, and it is set as zero for firm-years without type j external financing. $Restatement_i$ is an indicator for restatement firms and 0 for matching firms. $Post_{it}$ is the indicator for the post-restatement period (year t+1, t+2, and t+3). Because some firm-years do not have a specific type of external financing and thus have a value of zero for the

[12] In an untabulated analysis, we also compare the leverage between the pre- and post-restatement period and find that relative to matching firms, firms with material restatements experience a significant increase in leverage, consistent with the increased reliance on debt financing.

dependent variable, we use Tobit regressions. Following Cram et al. (2009), we include dummies for each pair of restatement and matching firms. We also control for industry-fixed effects. We adjust standard errors for firm and year clustering.

In this regression, coefficient β_1 captures the difference between restatement and matching firms in the pre-restatement period, coefficient β_2 captures the change in external financing choices for matching firms from the pre- to the post-restatement period, and coefficient β_3 captures the ***incremental change*** for restatement firms. A positive (negative) coefficient β_3 indicates that the relative use of type *j* external financing is higher (lower) after restatement announcements for restatement firms than for matching firms.

Following prior research (e.g., Hadlock and James 2002; Rauh and Sufi 2008), we include the following control variables: firm size, leverage, market-to-book ratio, return on assets (ROA), tangible assets (PPE/TA), marginal tax rate, and stock returns. Public financing has a higher fixed cost than private financing; thus economies of scale imply that it is cheaper for large firms to obtain public financing than for small firms. Firms with higher leverage are less likely to rely on debt financing due to the increased default risk. Prior research also suggests that firms tend to rely less on debt financing when the market-to-book ratio and past stock returns are high and when performance is poor (Fama and French 2002; Rauh and Sufi 2008). The use of collateral can reduce the cost of debt financing; thus firms with more tangible assets are more likely to rely on debt financing. One important benefit of debt financing is the tax benefit of interest expense; thus firms with higher marginal tax rate are more likely to use debt financing. All control variables are measured at the beginning of the year of interest or in the year before.

Since we examine the proportion of one particular type of external financing over total external financing, the multiple regressions are estimated using firm-years with non-zero external

financing. However, whether to obtain external financing is not a random decision. To control for this potential selection bias, we use Heckman's (1979) two-step approach. In the first step, we run a logit regression of the incidence of obtaining external financing using all firm-years (with or without external financing), with the same explanatory variables as in regression (1). We then add the Inverse Mills Ratio generated from the first step to regression (1).

Test of H1: The relative use of total debt financing (versus equity financing)

Table 4 reports regression results for the relative use of total debt financing. As reported in Column (1) of Table 4, consistent with H1, restatement firms rely more on debt financing after restatement announcements than matching firms. Compared to the pre-restatement period, the relative use of debt financing increases by 3.7 percentage points for restatement firms in the post-restatement period, significantly different from zero at the 0.021 level.

The coefficients on the control variables, except leverage, marginal tax rate, and stock returns, are significant at conventional levels. We find that large firms, more profitable firms, and firms with more tangible assets are more likely to rely on debt financing. Firms with higher growth opportunities (higher market-to-book ratio) are less likely to rely on debt financing. We find that the coefficient on the Inverse Mills Ratio is significantly different from zero, indicating the importance of controlling for the potential selection bias.

As discussed earlier, the tendency to switch to debt financing is stronger for firms with material restatements due to more serious credibility issues associated with material restatements. To investigate this possibility, we replace the restatement indicator in regression (1) with two indicators, one for material restatements (*Material*) and the other for other restatements (*OtherRestatement*):

$$External\_Financing_{j,it} = \alpha + \beta_{11} Material_i + \beta_{12} OtherRestatement_i + \beta_2 Post_{it} + \beta_{31} Post_{it} \times Material_i + \beta_{32} Post_{it} \times OtherRestatement_i + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ Dummies + \lambda Industry\ Dummies + \varepsilon_{j,it} \quad (2)$$

In this regression, coefficient β_{31} captures the ***incremental change*** for firms with material restatements, and coefficient β_{32} captures the ***incremental change*** for other restatement firms.

Column (2) of Table 4 reports the regression results. Compared to the matching firms, firms with material restatements experience a significant increase in the relative use of debt financing. The estimate of β_{31} is 0.111, significant at the 0.001 level, indicating that the relative use of debt financing increases by 11.1 percentage points. In contrast, we find that other restatement firms do not experience a significant change in debt financing.

In summary, the results reported above are consistent with hypothesis H1–firms rely more on debt financing and less on equity financing after restatement announcements. The increase is driven by firms with material restatements, and other restatement firms do not experience a significant change in debt financing.

Test of H2: The relative use of private versus public debt financing

In this section, we test H2 by examining the relative use of private debt financing in total debt financing. For this purpose, we use the same model specifications as in equations (1) and (2), except that (i) the dependent variable is the relative use of private debt financing over total debt financing, measured as the proportion of private debt financing in dollar amount over total debt financing, and (ii) the regressions are estimated based on firm-years with non-zero debt financing.[13]

Table 5 reports the regression results, first for all restatements in Column (1) and then

[13] Since the sample used in this regression only includes firm-years with non-zero debt financing, we control for the potential selection bias of having non-zero debt financing by using Heckman's two-stage approach. The first-stage regression estimates the probability of having debt financing and the second stage controls for the Inverse Mills Ratio.

separately for material restatements and other restatements in Column (2). Compared to matching firms, restatement firms on average experience a significant increase in the relative use of private debt financing and this increase is driven by firms with material restatements. As reported in Column (2), firms with material restatements experience a significant increase in the relative use of private debt financing: the increase is 8.6 percentage points and the p-value is 0.022. Other restatement firms do not experience a significant change in the relative use of private debt compared to the matching firms.

With respect to control variables, we find that large firms, high growth firms, and firms with more tangible assets are less likely to use private debt financing because it is cheaper for these firms to borrow from the bond market (e.g., Diamond 1991; Bolton and Freixas 2000; Hadlock and James 2002; Denis and Mihov 2003; Antoniou et al. 2008). More profitable firms and firms with higher marginal tax rate are more likely to rely on private debt financing.

Overall the results in Table 5 are consistent with H2 that after restatement announcements firms rely more on private debt financing than on public debt financing. This result is consistent with private debt holders being more effective in alleviating restatement firms' information problems. Again, the results only apply to firms with material restatements, not to other restatement firms.

4.3 Cross-sectional variation in the change of external financing choices – information effect

In this section, we present tests of H3 and investigate whether restatement firms with more severe information problems rely more on debt financing than other restatement firms. Following Graham et al. (2008), we use the change in analyst forecast dispersion to proxy for the extent of information problems; the larger the increase in forecast dispersion, the more severe the information problem is. The change in forecast dispersion is measured as the difference in

forecast dispersion between the three months before and the three months after restatement announcements, and forecast dispersion is calculated as the standard deviation of one-year-ahead earnings forecasts scaled by the absolute value of the mean earnings forecast.[14] To facilitate result interpretation, we define *Dispersion_up* as the decile rank of the change in forecast dispersion and standardize it to the range [0,1]; the more dispersed earnings forecasts become, the higher the value of *Dispersion_up.*

Restatement announcements are generally associated with both an increase in forecast dispersion and a decrease in analyst forecast. To ensure that our results are not driven by the cash flow effect, we also control for change in analysts' expectation of future performance. Following Hribar and Jenkins (2004), we use the change in analyst earnings forecast to proxy for the cash flow effect. The change in analyst forecast is calculated as the difference in one-year-ahead earnings forecast (of the same fiscal year) issued in the three months before and the three months after restatement announcements, scaled by the fiscal-year-end stock price preceding the restatement announcement.[15] We define *Forecast_down* as the inverse decile rank of the change in forecasts and standardize it to the range [0,1]; the more negative forecast revision is, the higher the value of *Forecast_down.*

Since we find that only firms with material restatements experience a significant change in external financing choices, we focus on firms with material restatements in this analysis (as well as in analyses presented in later sections). We use the following regression to examine the incremental effect of information problems:

[14] Note that we require that the forecast dispersions for pre- and post-restatement-announcement are measured using analyst forecasts issued for the same fiscal year to ensure consistency.
[15] Hribar and Jenkins (2004) document that the majority of the revision in analyst forecasts around restatement announcements show up in one-year-ahead forecasts.

$$
\begin{aligned}
Debt\_Financing_{it} = {} & \alpha + \beta_1 Material_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Material_i \\
& + \beta_{41} Material_i \times Dispersion\_up_i + \beta_{42} Material_i \times Forecast\_down_i \\
& + \beta_{51} Post_{it} \times Material_i \times Dispersion\_up_i + \beta_{52} Post_{it} \times Material_i \times Forecast\_down_i \\
& + \gamma Controls_{i,t-1} + \varphi\, Matched\ Pair\ Dummies + \lambda\, Industry\ Dummies + \varepsilon_{it}
\end{aligned}
\tag{3}
$$

Under this specification, β_{51} (β_{52}) captures the incremental impact of the information (cash flow) effect on the change in debt financing experienced by firms with material restatements. H3 implies that β_{51} is positive. Ex ante, it is unclear how the cash flow effect influences external financing choices. As documented in prior studies and confirmed in our analysis, while a decrease in the market-to-book ratio can lead to an increase in debt financing, a decrease in profitability can actually lead to a decrease in debt financing. Therefore we have no prediction for the sign of β_{52}.

Table 6 reports regression results. As reported in the table, β_{51} is significantly positive at the 0.003 level. That is, consistent with H3, material restatement firms with a larger increase in forecast dispersion rely more on debt financing than other material restatement firms. β_{52} is significantly negative, suggesting that material restatement firms with a larger downward forecast revision rely less on debt financing than other material restatement firms.

Overall, the results in this section suggest that (1) the information effect contributes significantly to the shift toward debt financing among firms with material restatements, and (2) the results are robust to controlling for the cash flow effect. These results lend further support to our argument that the reduced accounting credibility and the increased information asymmetry after restatement announcements lead to greater reliance on debt financing.

5. Additional and sensitivity analyses

5.1 The change in external financing choices for individual years after restatements

In the main analyses, we examine the average change in financing choices in the post-restatement period. To investigate whether the change in external financing choices applies to all three years in the post-restatement period, we replace the post-restatement period dummy in regression (1) with three indicators for the first, second, third year after the restatement (I_{it}^1, I_{it}^2, and I_{it}^3). For the sake of completeness, we also include an indicator for the year of restatement announcement (I_{it}^0).

$$\begin{aligned} Debt\_Financing_{it} = {} & \alpha + \beta_1 Material_i + \beta_{20} I_{it}^0 + \beta_{21} I_{it}^1 + \beta_{22} I_{it}^2 + \beta_{23} I_{it}^3 + \beta_{30} I_{it}^0 \times Material_i \\ & + \beta_{31} I_{it}^1 \times Material_i + \beta_{32} I_{it}^2 \times Material_i + \beta_{33} I_{it}^3 \times Material_i \\ & + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ Dummies + \lambda Industry\ Dummies + \varepsilon_{it} \end{aligned} \quad (4)$$

Coefficient β_{20} (β_{21}, β_{22}, β_{23}) captures the ***change*** in the relative use of debt financing for the matching firms from the three years before restatement announcements to the year of restatement announcement (the first, second, third year afterwards), and coefficient β_{30} (β_{31}, β_{32}, β_{33}) captures the ***incremental change*** in debt financing for firms with material restatements.

The regression results are presented in Table 7. The table shows that the increase in the proportion of debt financing applies to the year of restatement announcement and to the three years afterwards. With the inclusion of control variables, the incremental increase in debt financing for firms with material restatements is 17.5, 19.1, 13.6, and 10.6 percentage points in year t, t+1, t+2, and t+3, respectively. Therefore, it appears that (1) the effect of material restatements on external financing choices start to show up in the year of restatement announcement and (2) for the first three years after restatements, firms uniformly rely more on debt financing, although the increase in debt financing is gradually tapering off.

5.2 The effect of CEO/CFO turnover and auditor dismissal

Many restatement firms try to take measures to rebuild investors' trust, including replacing

CEOs and CFOs and dismissing auditors (e.g., Desai et al. 2006; Hennes et al. 2008; Hennes et al. 2010). If such measures are effective, we should expect that material restatement firms with CEO/CFO turnover or auditor dismissal experience a smaller change in external financing choices, or more specifically, a smaller increase in debt financing.

We test this prediction in an additional analysis and report the results in Table 8. To investigate whether material restatement firms with CEO/CFO turnover differ from other material restatement firms in the change in external financing choices, we first create an indicator variable, *CEO/CFO_Turnover* and then add an interaction term, *Post* × *Material* ×*CEO/CFO_Turnover*, to the regression model. If both the CEO and CFO in year t+1 are different from those in year t-1, we set *CEO/CFO_Turnover* to be one. Because firms with more negative restatements are more likely to replace CEO/CFO (Desai et al. 2006), we control for the effect of restatement magnitude. Similarly, we use a dummy variable, *Auditor_Dismissal,* to indicate material restatement firms with auditor dismissal by year t+1 and add the corresponding interaction terms to the regression.[16]

As reported Table 8, we find that material restatement firms with CEO/CFO turnover have a smaller increase in debt financing than other material restatement firms. In addition, material restatement firms with auditor dismissals have a smaller increase in debt financing than other material restatement firms. We also find that firms with more negative restatements have a bigger increase in debt financing, consistent with more negative restatements leading to more severe information problems after restatement announcements.

Overall, this analysis indicates that a prompt replacement of top executives and auditors has a significant impact on external financing choices. Replacing the top executives and auditors

[16] Of our sample of material restatement firms, around 28% replace both CEO and CFO by year t+1 and around 17% dismiss auditors by year t+1. Using alternative definitions does not affect the results qualitatively.

promptly indicates the firm's determination to rebuild investors' trust, and thus helps address the information problems after restatement announcements.

5.3 Costs of private debt financing

So far we have documented an increase in the use of debt financing for firms with material restatements. However, the increase in the use of debt financing is not without costs. Graham et al. (2008) document an increase in loan spread, a decrease in loan maturity, and an increase in the use of covenants. We collect data on loan spread and maturity and find similar results; the loan spreads increase by 66.7 basis points from 192.9 to 259.6 basis points with a p-value of 0.001, and the loan maturities decrease by 3.6 months from 48.5 to 44.9 months with a p-value of 0.001.

Another potential cost of the increase in debt financing to shareholders is debt holders' restriction on firms' investments and operations. Shareholders and debt holders differ in their preference for risk because of their differential payoff function. While debt holders are mostly concerned with the firm's ability to pay back interest and principal and thus prefer safer investments, shareholders usually are not concerned with diversifiable risk. As pointed out by Jensen and Meckling (1976), shareholders essentially hold a call option with the exercise price being the face value of the debt. Thus, from shareholders' perspective, one potential cost of the increase in the use of debt financing is foregoing risky projects with positive NPV. To shed light on this issue, we follow prior research (e.g., Guay 1999) and use return volatility, measured as the standard deviation of weekly stock returns, to capture a firm's risk taking behavior. Using a similar research design as Cheng and Farber (2008), we find that material restatement firms with a large increase in the use of debt financing on average experience a decrease in return volatility (a decrease of 0.003), whereas other material restatement firms have an increase in return

volatility (an increase of 0.004). The difference in differences is significant at the 0.01 level. This decrease in return volatility is potentially due to such firms' changes in investment behavior.

5.4 Alternative explanation - SEC restriction on public financing

Some readers may wonder whether the reduced use of equity financing after restatements is driven by the SEC's sanctions imposed on restatement firms. Because of ongoing investigations and the delay in filing annual reports (Badertscher and Burks 2010), the SEC may restrict firms' access to public capital markets in the years after restatements. To address this issue, we read the MD&A section of the material restatement firms' annual reports for the post-restatement period. We look for any indication that firms are restricted from accessing public financing by regulators. We were only able to find several such cases, and excluding those firms from our empirical analyses does not affect the results.

5.5 Using the propensity score approach to find matching firms

In this section, we use the propensity score method to find matching firms and then replicate the main analyses. Specifically, we run a logistic regression with the dependent variable being an indicator variable for restatement firms. We include all firms that do not restate financial statements in the sample period as the control firms. The independent variables include firm size, market-to-book ratio, stock returns, and leverage. We run this regression by industry-year with industry defined based on the Fama-French classification. Based on this regression, for each restatement firm-year in the post-restatement period, we find a firm in the same industry-year with the closest propensity score as the matching firm. We then replicate the main analyses. For the sake of space, we do not tabulate the results.

Overall, the results are similar to those in Tables 4 and 5. Firms with material restatements experience a significant increase in the use of debt financing and the relative use of private debt.

Specifically, when explaining the use of debt financing, the coefficient on *Post* × *Material* is 0.121 (p-value =0.004) and when explaining the use of private debt financing, the coefficient on *Post* × *Material* is 0.078 (p-value =0.017). These statistics are quantitatively similar to those reported in Table 4 and Table 5. Also, as in Tables 4 and 5, other restatement firms do not experience a significant change in the use of debt or private debt financing.[17]

5.6 Alternative benchmark years

An alternative explanation for our results is that managers engage in earnings management before equity financing to reduce the cost of raising equity capital. After restatements, firms do not need equity financing because they already have enough equity funds obtained in the pre-restatement period. To ensure that our results are not driven by this alternative explanation, we exclude from the benchmark years the years right before the restatement announcement year, since those years should be the ones that are most likely affected by earnings-management-induced equity financing, if any. When we exclude year t-1 or years t-2 and t-1 from the benchmark years, the inferences remain similar. These results indicate that this alternative story does not explain our results.

5.7 Change in information asymmetry for the restatement firms

An important assumption underlying our argument is that restatement firms experience a decrease in accounting information credibility and an increase in information asymmetry. In this section, we test whether restatement firms experience an increase in information asymmetry in the years after restatement announcements. Based on prior research, we use two commonly used proxies of information asymmetry: (1) the standard deviation of the daily stock return residual

[17] We also replicate the analyses in other tables and find that the inferences remain the same.

for a firm-year and (2) the average of bid-ask spread for a firm-year.[18] In an untabulated analysis, we regress the information asymmetry proxies on restatement dummies, indicators for post-restatement years, the interaction between them, as well as control variables. We find that compared to matching firms, firms with material restatements experience significant increases in both proxies of information asymmetry in the three years after the restatement announcements. In contrast, other restatement firms do not experience a significant change in information asymmetry compared to matching firms. These results confirm our assumption that firms with material restatements experience a decrease in the credibility of accounting earnings and an increase in information asymmetry after restatement announcements.

6. Conclusions

In this paper, we investigate whether accounting information quality affects firms' external financing choices. We focus on the restatement setting, since restatements are associated with a reduction in investors' confidence in accounting information quality. By linking this shock to the changes in external financing choices, we are able to examine the association of accounting information quality and firms' external financing choices in a powerful research setting.

Our sample includes 819 restatements in the period 1997-2006, of which 236 are classified as material restatements per Hennes et al. (2008). We compare the change in external financing choices from the pre- to the post-restatement period between the restatement firms and control firms matched by industry, year, size, and performance. We find that after restatements, firms

[18] Both measures have sound theoretical support and are widely used in the literature. For example, Krishnaswami and Subramaniam (1999) and Huson and MacKinnon (2003) argue that the standard deviation of stock return residual captures the asymmetry between managers and investors about firm-specific information. Copeland and Galai (1983), Glosten and Milgrom (1985), Venkatesh and Chiang (1986), and Chae (2005) argue that market makers widen bid-ask spreads when they suspect a high level of information asymmetry and show that high bid-ask spreads are associated with high information asymmetry.

rely more on debt financing, in particular private debt financing, and less on equity financing. We find that the results are driven by firms with material restatements. In addition, our cross-sectional analyses indicate that material restatement firms with an increase in forecast dispersion, a proxy for more severe information problems, are associated with an even greater tendency to switch to debt financing after restatement announcements. We also find that material restatement firms with prompt CEO/CFO turnover and auditor dismissal experience a smaller change in external financing choices, consistent with such firms being able to regain investors' trust.

The above findings indicate that accounting information quality significantly affects firms' external financing choices. After restatements, the perceived quality of accounting information decreases. As a result, the restatement firms have to rely more on private debt financing, since private debt holders are better able to address information problems than equity holders. Overall our paper provides new evidence on the impact of accounting information quality on firms' external financing choices as well as on external financing consequences of accounting restatements.

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Appendix A: Variable Definitions

Firm Size =	Natural log of total assets;
LEV =	Debt to total asset ratio, where debt is the sum of long-term debt and short-term debt;
M / B =	Market value of assets divided by book value of assets, with market value of assets defined as book value of assets minus book value of common equity, minus deferred taxes, and plus market value of equity;
ROA =	Return on assets, defined as operating income before depreciation divided by total assets;
PPE/TA =	Net property, plant, and equipment divided by total assets;
Marginal tax rate =	Simulated marginal tax rate provided by John Graham. If it is missing, the value is replaced by an estimated value based on Graham and Mills (2008); Specifically, the estimated value is calculated as $0.331 - 0.075 \times$ *LowUSETRDummy* $- 0.012 \times$ *NOLDummy* $- 0.106 \times$ *BookLossDummy* $+$ $0.037 \times$ *ForeignActivityDummy*, where *LowUSETRDummy* = 1 if federal tax is less than 10% of domestic pretax income, zero otherwise; *NOLDummy* = 1 if tax loss carry forward is greater than 0, zero otherwise; *BookLossDummy* =1 if pre-tax income is less than 0, zero otherwise; and *ForeignActivityDummy* = 1 if foreign pre-tax income is greater than 5% of total pretax income, zero otherwise. Please see Graham and Mills (2008) for more details;
Stock return =	The market-adjusted stock returns in the fiscal year.

Appendix B: Logit Regression of the Probability of External Financing

This table reports the Logit regression of the probability of external financing around restatement announcements:

$$\Pr(External\_Financing_{it}) = \alpha + \beta_{11} Material_i + \beta_{12} Other\ Restatemen\ t_i + \beta_2 Post_{it} + \beta_{31} Post_{it} \times Material_i + \beta_{32} Post_{it} \times Other\ Restatemen\ t_i + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ Dummies + \lambda Industry\ Dummies + \varepsilon_{it}$$

The sample includes 819 pairs of restatement and matching firms in the pre- and post-restatement period. The regression is based on 8,383 firm-years with available data. $External\_Financing_{it}$ is one if the firm has non-zero external financing in the year and zero otherwise. $Post_{it}$ is the indicator for the post-restatement period, that is, the three years after the restatement year. The three years before restatement announcements are used as benchmark years. $Material_i$ is an indicator for material restatement firms, and $OtherRestatement_i$ is an indicator for other restatement firms. Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables.

The table reports the coefficient estimates, the corresponding two-sided p-values (except for the interaction terms, for which one-sided p-values are reported), the number of observations, and pseudo R^2. The p-value is based on standard errors adjusted for firm and year-level clustering.

	Coef.	p-value	Marginal effect
Intercept	-0.624	0.037	
Material	0.193	0.001	0.076
Other Restatement	-0.043	0.281	-0.017
Post	0.009	0.867	0.003
Post* × *Material	**-0.314**	**0.001**	**-0.124**
Post* × *Other Restatement	**-0.001**	**0.491**	**-0.001**
Firm size	0.163	0.001	0.117
LEV	0.369	0.001	0.033
M/B	0.001	0.838	0.002
ROA	-0.095	0.156	-0.015
PPE/TA	0.176	0.049	0.017
Marginal tax rate	-0.300	0.005	-0.017
Stock return	0.100	0.001	0.035
Matched pair dummies	YES		
Industry-fixed effects	YES		
N	8,383		
Pseudo R^2	0.067		

TABLE 1
Sample selection and descriptive statistics of restatement firms

This table describes the selection process of our restatement sample, 819 restatement firms with restatements announced in the period 1997-2006, and the characteristics of the restatement firms.

Panel A: Sample selection

Restriction		Sample size
Accounting restatements in the period 1997-2006 (per GAO reports)		2,705
Less:		
Firms without basic financial data from Compustat (i.e., total assets, sales, and net income)	341	
Subsequent restatements [a]	573	
Firms operating in regulated or financial industries (i.e., SICs falling between 4900 and 4999 or between 6000 and 6999)	321	
Firms without external financing activities over the six years around the restatement announcement year	284	
Firms without required data from CRSP or Compustat to calculate regression variables	189	
Firms without matching firms (matched on 3-digit SICs, year, firm size, and performance measures) [b]	178	
Restatement firms used in the analyses		819
Classification of accounting restatements		
Material restatements, i.e., restatements identified as "accounting irregularities" per Hennes et al. (2008)		236
Other restatement firms used in the analyses		583

[a] We only keep the first observation for firms with multiple restatements in the sample period.
[b] We lose 26 restatement firms because we cannot find appropriate matching firms based on the matching criteria. We lose another 152 restatement firms because the corresponding matching firms do not have required data to calculate regression variables.

TABLE 1 (cont'd)

Panel B: Financial characteristics of the restatement firms in the restatement announcement year

Variable	Mean	Std. Dev.	Q1	Median	Q3
Full sample					
Market value ($ millions)	2,237.96	4,092.76	165.78	567.02	2,087.24
Total assets ($ millions)	1,352.80	2,396.79	109.45	381.38	1,400.29
Sales ($ millions)	1,374.32	2,381.02	93.06	383.95	1,411.28
Book value ($ millions)	444.05	781.13	30.82	135.04	474.68
Operating income ($ millions)	140.02	267.21	0.38	33.26	147.25
Leverage	0.253	0.218	0.047	0.223	0.397
ROA	0.057	0.153	0.003	0.092	0.149
Z-score	5.375	5.294	1.711	3.709	9.658
Market-to-book	1.771	1.028	1.075	1.417	2.080
Stock returns	0.046	0.641	-0.394	-0.056	0.304
Material restatements					
Market value ($ millions)	3,051.56	6,237.15	203.35	634.81	2,312.72
Total assets ($ millions)	2,145.40	4,473.68	135.88	482.03	1,617.37
Sales ($ millions)	1,927.58	3,587.03	120.88	497.65	1,769.53
Book value ($ millions)	470.87	937.18	26.66	142.42	494.30
Operating income ($ millions)	167.54	409.52	-1.28	29.85	141.26
Leverage	0.286	0.225	0.100	0.267	0.428
ROA	0.011	0.144	-0.002	0.073	0.122
Z-score	4.436	4.710	1.453	2.933	6.414
Market-to-book	1.559	0.853	1.033	1.287	1.690
Stock returns	-0.229	0.477	-0.584	-0.305	0.064

TABLE 2
Descriptive statistics on external financing

This table presents the descriptive statistics on external financing for the 819 restatement firms in our sample. The table reports the number of firms with any type of external financing (private debt, public debt, or equity) and the mean amount of funds raised for each of the six years around year t as well as for year t. Year t refers to the fiscal year in which the restatement announcement falls.

	t-3	t-2	t-1	t	t+1	t+2	t+3
Number of firms with external financing	426	437	446	376	408	350	294
Average amount of funds raised across firms with external financing ($ millions)							
Total	474.88	512.67	509.40	683.68	455.59	590.13	719.62
Debt	396.20	412.40	432.32	600.52	388.70	506.01	654.90
Private debt	226.79	223.94	263.08	340.41	279.24	346.23	389.29
Public debt	169.41	188.46	169.24	260.11	109.46	159.78	265.61
Equity	78.68	100.27	77.08	83.16	66.89	84.12	64.72

TABLE 3
Change in the relative use of each type of external financing

This table reports the descriptive statistics on the relative use of each type of external financing in the pre- and post-restatement periods. The left-hand side of the table presents the statistics on the full sample of 819 restatement firms and the matching firms, and the right-hand side of the table presents the statistics on the 236 material restatement firms and the corresponding matching firms. For each firm, the proportion of a specific type of financing in the pre-restatement period is the ratio of that type of financing in dollar amount in the three years before the restatement announcement year over total external financing the firm has in the same period. The proportion of each type of financing in the post-restatement period is defined similarly.

	All restatement firms				Material restatement firms			
	Pre-restatement period (a)	Post-restatement period (b)	(b) – (a)	(p-value)	Pre-restatement period (a)	Post-restatement period (b)	(b) – (a)	(p-value)
Mean Equity Financing								
Restatement firms (1)	0.302	0.275	-0.027	(0.119)	0.324	0.191	-0.133	(0.001)
Matching firms (2)	0.291	0.264	-0.027	(0.123)	0.291	0.264	-0.027	(0.379)
(1) – (2)	0.011	0.011	**-0.001**	**(0.985)**	0.033	-0.073	**-0.106**	**(0.014)**
Mean Private debt financing								
Restatement firms (1)	0.542	0.588	0.046	(0.015)	0.510	0.665	0.155	(0.001)
Matching firms (2)	0.571	0.594	0.023	(0.215)	0.572	0.593	0.021	(0.513)
(1) – (2)	-0.029	-0.006	**0.023**	**(0.392)**	-0.062	0.072	**0.134**	**(0.004)**
Mean Public debt financing								
Restatement firms (1)	0.155	0.137	-0.018	(0.142)	0.166	0.143	-0.023	(0.320)
Matching firms (2)	0.137	0.141	0.004	(0.758)	0.137	0.142	0.005	(0.808)
(1) – (2)	0.018	-0.004	**-0.022**	**(0.208)**	0.029	0.001	**-0.028**	**(0.380)**

TABLE 4
Multiple regressions of the change in the use of debt financing

This table reports the results from the following Tobit regressions:

$$Debt\_Financing_{it} = \alpha + \beta_1 Restatemen\ t_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Restatemen\ t_i + \gamma Controls_{i,t-1} + \varphi\ Matched\ \ Pair\ \ Dummies + \lambda\ Industry\ \ Dummies + \varepsilon_{it} \quad (1')$$

$$Debt\_Financing_{it} = \alpha + \beta_{11} Material_i + \beta_{12} OtherResta\ tement_i + \beta_2 Post_{it} + \beta_{31} Post_{it} \times Material_i + \beta_{32} Post_{it} \times OtherResta\ tement_i + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ \ Dummies + \lambda Industry\ Dummies + \varepsilon_{it} \quad (2')$$

The sample includes 819 pairs of restatement and matching firms in the pre- and post-restatement period. The regressions are based on 4,289 firm-years with non-zero external financing and available data. $Debt\_Financing_{it}$ is the ratio of debt financing (including both public and private debt financing) in dollar amount over the total amount of external financing, where the total amount of external financing is the sum of equity and debt financing. If a firm does not have debt financing, the variable is set as zero. $Post_{it}$ is the indicator for the post-restatement period, that is, the three years after the restatement announcement year. The three years before restatement announcements are used as benchmark years. $Restatement_i$ is an indicator for restatement firms, $Material_i$ is an indicator for material restatement firms, and $OtherRestatement_i$ is an indicator for other restatement firms. Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables. Inverse Mills Ratio is generated from the 1st stage regression, which is estimated using all firm-years from the sample (with or without external financing), with the incidence of external financing as the dependent variable and the same explanatory variables as the reported 2nd stage regression.

The table reports the coefficient estimates, the corresponding two-sided p-values (except for the interaction terms, for which one-sided p-values are reported), the number of observations, and pseudo R^2. The p-value is based on standard errors adjusted for firm- and year-level clustering.

	Restatement firms (1)		Separating material restatements from other restatement firms (2)	
	Coef.	p-value	Coef.	p-value
Intercept	-0.252	0.085	-0.248	0.061
Restatement	-0.027	0.001		
Material			0.001	0.994
Other Restatement			-0.039	0.001
Post	-0.070	0.001	-0.068	0.001
Post* × *Restatement	**0.037**	**0.021**		
Post* × *Material			**0.111**	**0.001**
Post* × *Other Restatement			**0.008**	**0.357**
Firm size	0.084	0.001	0.084	0.001
LEV	0.072	0.287	0.062	0.348
M/B	-0.035	0.001	-0.034	0.001
ROA	0.477	0.001	0.486	0.001
PPE/TA	0.122	0.005	0.133	0.001
Marginal tax rate	0.111	0.183	0.116	0.171
Stock return	-0.006	0.560	-0.007	0.545
Inverse Mills Ratio	0.355	0.001	0.344	0.001
Matched pair dummies	YES		YES	
Industry-fixed effects	YES		YES	
N	4,289		4,289	
Pseudo R^2	0.404		0.406	

TABLE 5

Multiple regressions of the change in the use of private (vs. public) debt financing

This table reports the results from the following Tobit regressions:

$$Private\_Debt_{it} = \alpha + \beta_1 Restatement_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Restatement_i + \gamma Controls_{i,t-1} + \varphi\, Matched\ Pair\ Dummies + \lambda\, Industry\ Dummies + \varepsilon_{it} \quad (1'')$$

$$Private\_Debt_{it} = \alpha + \beta_{11} Material_i + \beta_{12} OtherRestatement_i + \beta_2 Post_{it} + \beta_{31} Post_{it} \times Material_i + \beta_{32} Post_{it} \times OtherRestatement_i + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ Dummies + \lambda Industry\ Dummies + \varepsilon_{it} \quad (2'')$$

The sample includes 819 pairs of restatement and matching firms in the pre- and post-restatement period. The regressions are based on 3,065 firm-years with non-zero debt financing and available data. $Private\_Debt_{it}$ is the ratio of private debt financing in dollar amount over the total amount of debt financing (including both public and private debt financing). If a firm does not have private debt financing, the variable is set as zero. $Post_{it}$ is the indicator for the post-restatement period, that is, the three years after the restatement announcement year. The three years before restatement announcements are used as benchmark years. $Restatement_i$ is an indicator for restatement firms, $Material_i$ is an indicator for material restatement firms, and $OtherRestatement_i$ is an indicator for other restatement firms. Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables. Inverse Mills Ratio is generated from the 1st stage regression, which is estimated using all firm-years from the sample, with the incidence of debt financing as the dependent variable and the same explanatory variables as the reported 2nd stage regression.

The table reports the coefficient estimates, the corresponding two-sided p-values (except for the interaction terms, for which one-sided p-values are reported), the number of observations, and pseudo R^2. The p-value is based on standard errors adjusted for firm- and year-level clustering.

	Restatement firms (1)		Separating material restatements from other restatement firms (2)	
	Coef.	p-value	Coef.	p-value
Intercept	0.471	0.053	0.494	0.016
Restatement	-0.035	0.057		
Material			-0.085	0.005
Other Restatement			-0.009	0.680
Post	0.034	0.138	0.039	0.073
Post* × *Restatement	**0.048**	**0.049**		
Post* × *Material			**0.086**	**0.022**
Post* × *Other Restatement			**0.036**	**0.133**
Firm size	-0.060	0.006	-0.061	0.001
LEV	-0.051	0.335	-0.057	0.211
M/B	-0.022	0.004	-0.021	0.005
ROA	0.242	0.008	0.242	0.009
PPE/TA	-0.147	0.012	-0.159	0.005
Marginal tax rate	0.159	0.019	0.157	0.020
Stock return	-0.010	0.329	-0.012	0.200
Inverse Mills Ratio	0.022	0.812	-0.083	0.439
Matched pair dummies	YES		YES	
Industry-fixed effects	YES		YES	
N	3,065		3,065	
Pseudo R^2	0.308		0.309	

TABLE 6
The change in the use of debt financing: the information effect

This table reports the results from the following Tobit regression:

$$\begin{aligned} Debt\_Financing_{it} = {} & \alpha + \beta_1 Material_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Material_i \\ & + \beta_{41} Material_i \times Dispersion\_up_i + \beta_{42} Material_i \times Forecast\_down_i \\ & + \beta_{51} Post_{it} \times Material_i \times Dispersion\_up_i + \beta_{52} Post_{it} \times Material_i \times Forecast\_down_i \\ & + \gamma Controls_{i,t-1} + \varphi\, Matched\ Pair\ Dummies + \lambda\, Industry\ Dummies + \varepsilon_{it} \end{aligned} \quad (3)$$

The sample includes 236 pairs of material restatement and matching firms in the pre- and post-restatement period. The regressions are based on 678 firm-years with non-zero external financing and analyst forecast data. $Debt\_Financing_{it}$ is the relative use of debt financing by firm *i* in year *t*. It is defined as the ratio of debt financing in dollar amount to the total amount of external financing, where the total amount of external financing is the sum of equity financing and debt financing (including both public and private debt financing). If a firm does not have debt financing, the variable is set as zero. $Post_{it}$ is the indicator for the post-restatement period, that is, the three years after the restatement announcement year. The three years before restatement announcements are used as benchmark years. $Material_i$ is an indicator for material restatement firms; $Dispersion\_up_i$ is the standardized decile rank of the change in forecast dispersion around restatement announcements; the larger the increase in forecasts dispersion, the higher the value of $Dispersion\_up_i$; $Forecast\_down_i$ is the standardized inverse decile rank of the change in earnings forecasts around restatement announcements; the more negative forecast revision is, the higher the value of $Forecast\_down_i$. Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables. Inverse Mills Ratio is generated from the 1st stage regression, which is estimated using all firm-years from the sample (with or without external financing), with the incidence of external financing as the dependent variable and the same explanatory variables as the reported 2nd stage regression.

The table reports the coefficient estimates, the corresponding two-sided p-values (except for the interaction terms in bold, for which one-sided p-values are reported), the number of observations, and pseudo R^2. The p-value is based on standard errors adjusted for firm- and year-level clustering.

	Coef.	p-value
Intercept	-1.526	0.001
Material	-0.048	0.001
Material×Dispersion_up	-0.005	0.621
Material×Forecast_down	0.032	0.003
Post	-0.029	0.001
Post × Material	**0.043**	**0.001**
Post × Material×Dispersion_up	**0.050**	**0.003**
Post ×Material×Forecast_down	-0.116	0.002
Firm size	0.080	0.001
LEV	0.044	0.003
M/B	-0.021	0.001
ROA	0.455	0.001
PPE/TA	0.536	0.001
Marginal tax rate	0.016	0.488
Stock return	0.018	0.001
Inverse Mills Ratio	0.544	0.001
Matched pair dummies	YES	
Industry-fixed effects	YES	
N	678	
Pseudo R^2	0.457	

TABLE 7
The change in the use of debt financing in individual years

This table reports the results from the following Tobit regression:

$$\begin{aligned} Debt\_Financing_{it} = {} & \alpha + \beta_1 Material_i + \beta_{20} I_{it}^0 + \beta_{21} I_{it}^1 + \beta_{22} I_{it}^2 + \beta_{23} I_{it}^3 + \beta_{30} I_{it}^0 \times Material_i \\ & + \beta_{31} I_{it}^1 \times Material_i + \beta_{32} I_{it}^2 \times Material_i + \beta_{33} I_{it}^3 \times Material_i \\ & + \gamma Controls_{i,t-1} + \varphi Matched\ Pair\ Dummies + \lambda Industry\ Dummies + \varepsilon_{it} \end{aligned} \quad (4)$$

The sample includes 236 pairs of material restatement and matching firms in the pre- and post-restatement period. The regressions are based on 1,539 firm-years with non-zero external financing and available data. $Debt\_Financing_{it}$ is the relative use of debt financing by firm *i* in year *t*. It is defined as the ratio of debt financing in dollar amount to the total amount of external financing, which is the sum of equity financing and debt financing. If a firm does not have debt financing, the variable is set as zero. I_{it}^0, I_{it}^1, I_{it}^2, and I_{it}^3 are the indicators for the year of restatement announcement, the first year after, second year after, and third year after, respectively. The three years before restatement announcements are used as benchmark years. $Material_i$ is an indicator for material restatement firms. Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables. Inverse Mills Ratio is generated from the 1st stage regression, which is estimated using all firm-years from the sample (with or without external financing), with the incidence of external financing as the dependent variable and the same explanatory variables as the reported 2nd stage regression.
The table reports the coefficient estimates, the corresponding two-sided p-values (except for the interaction terms, for which one-sided p-values are reported), the number of observations, and pseudo R^2. The p-value is based on standard errors adjusted for firm- and year-level clustering.

	Coef.	p-value
Intercept	0.305	0.380
Material	-0.031	0.223
Indicator for year t	-0.119	0.051
Indicator for year t+1	-0.062	0.136
Indicator for year t+2	-0.046	0.062
Indicator for year t+3	-0.011	0.749
Indicator for year t × *Material*	0.175	0.014
Indicator for year t+1 × *Material*	0.191	0.004
Indicator for year t+2 × *Material*	0.136	0.001
Indicator for year t+3 × *Material*	0.106	0.066
Firm size	0.043	0.226
LEV	-0.066	0.426
M/B	-0.034	0.003
ROA	0.679	0.001
PPE/TA	0.084	0.179
Marginal tax rate	0.145	0.204
Stock returns	-0.025	0.392
Inverse Mills Ratio	0.114	0.068
Match pair dummies	YES	
Industry-fixed effects	YES	
N	1,539	
Pseudo R^2	0.413	

TABLE 8

The impact of CEO/CFO turnover and auditor turnover on the change in debt financing

This table reports the results from the following Tobit regression:

$$\begin{aligned} Debt\_Financing_{it} &= \alpha + \beta_1 Material_i + \beta_2 Post_{it} + \beta_3 Post_{it} \times Material_i + \beta_{41} Material_i \times Large_i \\ &+ \beta_{42} Material_i \times CEO/CFO\_Turnonver_i + \beta_{43} Material_i \times Auditor\_Dismissal_i + \beta_{51} Post_{it} \times Material_i \times Large_i \\ &+ \beta_{52} Post_{it} \times Material_i \times CEO/CFO\_Turnover_i + \beta_{53} Post_{it} \times Material_i \times Auditor\_Dismissal_i \\ &+ \gamma Controls_{i,t-1} + \varphi\, Matched\ Pair\ Dummies + \lambda\, Industry\ Dummies + \varepsilon_{it} \end{aligned} \quad (5)$$

The sample includes 236 pairs of material restatement and matching firms. The regressions are based on 1,288 firm-years with non-zero external financing and available turnover data. $Debt\_Financing_{it}$ is the relative use of debt financing by firm *i* in year *t*. It is defined as the ratio of debt financing in dollar amount to the total amount of external financing. It is set as zero if a firm does not have debt financing. $Post_{it}$ is the indicator for the post-restatement period, i.e., the three years after the restatement year. The three years before the restatement year are used as benchmark years. $Material_i$ is an indicator for material restatement firms. *Large* is the standardized decile rank of restatement magnitude (scaled by total assets at the end of year t-1) (the more negative the restatement is, the higher the value of *Large* is), *CEO/CFO_Turnover* is an indicator variable for material restatement firms that experienced a change in both CEO and CFO in year t or t+1 (compared to year t-1), and *Auditor_Dismissal* is an indicator variable for material restatement firms that experienced auditor dismissals in year t or t+1 (compared to year t-1). Control variables are measured at the beginning of the fiscal year. Please see Appendix A for the measurement of control variables. Inverse Mills Ratio is generated from the 1st stage regression, which is estimated using all firm-years from the sample (with or without external financing), with the incidence of external financing as the dependent variable and the same explanatory variables as the reported 2nd stage regression.The table reports the coefficient estimates and the two-sided p-values (except for the interaction terms in bold, for which one-sided p-values are reported), the number of observations, and pseudo R^2. P-values are based on standard errors adjusted for firm- and year-level clustering.

	Coef.	p-value
Intercept	-0.503	0.277
Material	-0.016	0.778
Material × Large	0.054	0.606
Material × CEO/CFO turnover	-0.086	0.223
Material × Auditor turnover	0.011	0.819
Post	-0.079	0.006
Post × Material	-0.031	0.718
Post × Material × Large	**0.287**	**0.027**
Post × Material × CEO/CFO_Turnover	**-0.129**	**0.056**
Post × Material × Auditor_Dismissal	**-0.119**	**0.032**
Firm size	0.077	0.040
LEV	0.018	0.816
M/B	-0.034	0.001
ROA	0.603	0.001
PPE/TA	0.080	0.311
Marginal tax rate	0.164	0.190
Stock return	0.003	0.893
Inverse Mills Ratio	0.454	0.001
Matched pair dummies	YES	
Industry-fixed effects	YES	
N	1,288	
Pseudo R^2	0.429	